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10/524,481	10/14/2005	Antoine Dokou Akemakou	17170/006001	8304
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EXAMINER DESAL, NAISHADH N				
ART UNIT 2834		PAPER NUMBER		
NOTIFICATION DATE 06/19/2009		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/524,481

Applicant(s)

AKEMAKOU, ANTOINE DOKOU

Examiner

NAISHADH N. DESAI

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/10/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what applicant means by "elementary pattern". Examiner considers Evans et al' Fig 1 to clearly show that several different elementary patterns can be distinguished, in accordance with applicant's amended claim 1. It does not appear that applicant has claimed any clear structural and /or functional pattern that clearly distinguishes applicant's claimed invention over cited art. Appropriate clarification and /or correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5, 8-17, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans et al (US 5,663,605) in view of Török et al (US 6512318).

2. Regarding claim 1, Evans et al teaches:

A rotating electrical machine that has a rotor with a body made of magnetic materials (abstract), a stator surrounding the rotor (Col 1 l 67); the stator has at least one armature coil (Fig 2), and the rotor (10) has closed notches in the body and devices to selectively establish closed magnetic circuits passing around the armature coil of the stator (Figs 1 and 2); these devices include:

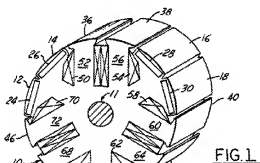


FIG. 1

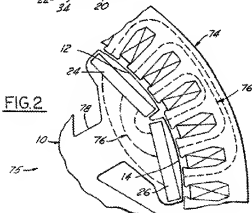


FIG. 2

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. 1, a rotor 10 for an electrical machine according to one embodiment of the present invention will be described. Rotor 10 is rotatably mounted on a shaft 11. In this embodiment of the present invention, rotor 10 has 12 magnetic poles, though the invention is not so limited. Six of the poles 12, 14, 16, 18, 20 and 22 are formed by permanent magnets 24, 26, 28, 30, 32 and 34. The remaining six poles 36, 38, 40, 42, 44 and 46 are wound poles. Those skilled in the art will recognize those wound poles as "salient" poles, as opposed to "claw poles" in Lundell-type rotors.

Poles 36, 38, 40, 42, 44 and 46 are magnetized by field windings. Those windings include winding 50, wound around base 52 of pole 36; winding 54, wound around base 56 of pole 38; winding 58, wound around base 60 of pole 40; winding 62, wound around base 64 of pole 42; winding 66, wound around base 68 of pole 44; and winding 70, wound around base 72 of pole 46. In the preferred embodiment of the present invention, windings 50, 54, 58, 62, 66 and 70 are all connected in series. However, this series connection is not an essential feature of the present invention.

Windings 50, 54, 58, 62, 66 and 70 are wound such that for each adjacent (that is, consecutive) pair of wound poles (e.g., 36 and 38; 40 and 42; or 44 and 46), the windings on the two adjacent poles are wound in opposite directions. Thus, for a given direction of current flowing in the field coil comprising windings 50, 54, 58, 62, 66 and 70, the adjacent poles in each pair of poles will have opposite magnetic polarities.

permanent excitation magnets (Fig 1,24) able to generate magnetic fluxes;
excitation coils (windings, see col 2 ll 44-45) housed in the notches of the rotor to define
coiled poles; said coils are able to be excited and generate magnetic flux components to
counter the fluxes generated by at least some of the magnets to create defluxing (Col 4
ll 26-50);

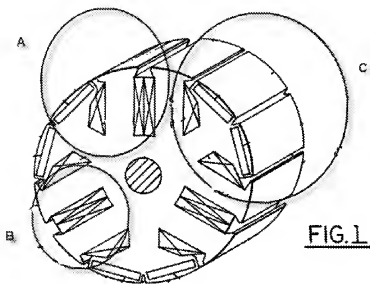
25 -----
With these polarities, wound-field poles 36, 38, 40, 42, 44
and 46 work in an additive manner with permanent magnet
poles 12, 14, 16, 18, 20 and 22 to "boost" the output of
alternator 75. If, for a given speed of rotation of rotor 10, the
30 output voltage of alternator 75 is too high, regulator 80 will
reduce the average current through field coil 89. This
reduction in current will reduce the flux generated by the
wound-field poles of rotor 10, thus reducing the output
voltage from alternator 75.

35 However, for some rotational speeds of rotor 10, even
reducing current flow in field coil 89 to zero can still result
in output voltages above which regulator 80 is attempting to
regulate. This would be true because of permanent magnet
poles' 12, 14, 16, 18, 20 and 22 ability to generate magnetic
40 flux with no field current in field coil 89. If a reduction to
zero field current is not sufficient, regulator 80 will cause
current flow in the opposite direction (say, direction 94) in
field coil 89. By modulating the current in the opposite
direction, regulator 80 will reduce the output voltage of
45 alternator 75 to the target value.

When regulator 80 changes the direction of the current
through field coil 89, the voltage induced in the windings of
stator 74 "bucks" the voltage induced by the permanent
magnet poles. In this event, the polarities of the poles of
rotor 10 will be as follows:
50

wherein the number Na of magnets [Fig 1,26] and the number (Nb) of excitation
coils [Fig 1,36] and the arrangement of the coils and magnets in relation to each other
form a plurality of distinct elementary patterns (me) [see re-illustration of Fig 1,A-C
below], wherein at least one distinct elementary pattern is repeated a number Nme of

times [re-illustration of Fig 1,A-C below a shows that any of the patterns A-C can be repeated] and wherein the elementary pattern (me) comprises at least one reluctance pole [re-illustration of Fig 1,A and B below].



Evans teaches device as claimed above, except for literally mentioning that the poles are reluctance poles. Török et al (abstract and Col 1 II 14-27) teaches a device using reluctance poles. It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Evans with the teachings of Török et al to make a motor having reluctance poles. The motivation to do so would be that it would allow for a more uniform torque development and reducing the electrical conduction losses in the winding (Col 1 II25-27 of Török et al).

3. Regarding claim 2, Evans et al (Fig 1) teaches that Na is equal to or greater than 1, Nb is equal to or greater than 1, Nme is equal to or greater than 1, and the pair Na, Nb is different than 1.1.
4. Regarding claim 3, Evans et al (Fig 2) teaches that the magnets Na of the same elementary pattern are arranged to generate a radial magnetic flux.
5. Regarding claim 4, Evans et al (Fig 1, 24 and 28) teaches that the magnets in the same elementary pattern have the same polarity.
6. Regarding claim 5, Evans et al (Fig 2) teaches that the coil poles in the same elementary pattern have the same polarity.
7. Regarding claim 8, Evans et al (Fig 1) teaches that the elementary pattern comprises at least one coil pole and a consecutive magnet separated by at least one reluctance pole.
8. Regarding claim 9, Evans et al (Figs 1 and 3) teaches that the winding strands of a coil belonging to an elementary pattern are held in two adjacent notches placed between two consecutive magnets.

9. Regarding claim 10, Evans et al (re-illustration of Fig 1,A-C above) teaches that several elementary patterns are associated with each other.

10. Regarding claim 11, Evans et al (re-illustration of Fig 1,A-C above) teaches that each of the elementary patterns are different.

11. Regarding claim 12, Evans et al (re-illustration of Fig 1,A-C above and Col 4 ll 5-50 and Tables 1 and 2) teaches that there is, between at least two consecutive elementary patterns, a succession of at least one pair of North-South or South-North poles created by at least one magnet.

12. Regarding claim 13, Evans et al (re-illustration of Fig 1,A-C above and Cols 2 and 3 ll 66-67,1-2 and Table 1) teaches that the at least one magnet inserted between the at least two consecutive elementary patterns has a different polarity from at least one magnet belonging to at least one elementary pattern.

13. Regarding claim 14, Evans et al (Col 5 ll 14-16) teaches that the Nb coils are not all excited simultaneously.

14. Regarding claim 15, Evans et al (Col 5 ll 14-16) teaches that the intensity of modulation (I_{mod}) is in an interval between $-I_b$ and $+I_b$, where I_b is the maximum intensity of the magnetic flux supplied by the Nb coils.

15. Regarding claim 16, Evans et al (Col 5 ll 14-16 and Col 4 ll 35-40) teaches that there is a residual magnetic flux (F_r) coming from the magnets which is not subject to the influence of the defluxing magnetic flux (F_d) produced by the excitation coils.

16. Regarding claim 17 (abstract) the electrical machine consists of an automobile alternator.

17. Regarding claims 19-21, Evans et al and Török et al (US 6512318) teaches the claimed invention as applied to claim 1 above, except for literally mentioning that "consecutive magnets are separated by at least one reluctance pole", or "at least two consecutive coil poles separated by at least one reluctance pole" or "at least one coil pole and a consecutive magnet separated by at least one reluctance pole". Examiner notes however that the re-illustration of Fig 1,A-C above provided by examiner appears to teach that "consecutive magnets are separated by at least one reluctance pole", or "at least two consecutive coil poles separated by at least one reluctance pole" or "at least one coil pole and a consecutive magnet separated by at least one reluctance pole", depending on how one determines the elementary patterns.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the "consecutive magnets to be separated by at least one reluctance pole", or "at least two consecutive coil poles to be separated by at least one reluctance pole" or "at least one coil pole and a consecutive magnet to be

separated by at least one reluctance pole", since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japiske*, 86 USPQ 70. The motivation to do so would be that it would allow one to desing a device having improved power output (Col 1 I 40 of Evans et al) and that it would allow for a more uniform torque development and reduction of the electrical conduction losses in the winding (Col 1 II25-27 of Török et al).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Evans et al in view of Török et al (US 6512318) and further in view of Akemakou (US 6847143)

18. Regarding claim 18, Akemakou (abstract) teaches that the electrical machine consists of an automobile alternator-starter.

Evans et al (Col 1 II 26-30) and Török et al teaches the claimed invention as applied to claim 1 above, except for and that it can be used as an alternator in a hybrid vehicle.

Akemakou teaches a hybrid machine. Akemakou clearly discloses that the rotary electrical machine can be used as an alternator/starter (abstract of Akemakou).

It would have been obvious to a person having ordinary skills in the art at the time the invention was made to combine the teachings of Evans et al and Török et al (US 6512318) with Akemakou to make a machine that can also be used as an alternator-starter. The motivation to do so would be that it would allow for the alternator to function as a starter to drive the motor in a hybrid vehicle.

It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from

a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham, 2 USPQ2d 1647 (1987)*.

Response to Arguments

19. Applicant's arguments filed 3/10/2009 have been fully considered but they are not persuasive. Applicant's argument that prior art does not teach any "elementary patterns" are not persuasive. See re-illustration of Fig 1,A-C above of Evans et al provided by examiner.

Regarding applicant's argument that Török et al fails to supply that which Evans lacks, is not persuasive since Török et al (abstract and Col 1 ll 14-27) clearly teaches the use of a reluctance pole.

Regarding applicant's argument that the Examiner relies on Akemakou solely for the purpose of teaching that the device may be used as an alternator-starter is not persuasive. Examiner relies upon Akemakou to establish the fact that a device can be applied in various uses, including as an alternator-starter. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham, 2 USPQ2d 1647 (1987)*.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAISHADH N. DESAI whose telephone number is (571)270-3038. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen Leung can be reached on (571) 272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2834

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen Leung/
Supervisory Patent Examiner, Art Unit 2834

NND